

## Northwest Region Cleanup

### Portland Harbor Source Control National Remedy Review Board

November 18, 2015

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Good afternoon. I'm Matt McClincy and Alex Liverman and I are going to provide an overview of the state of Portland Harbor Source Control.

## Portland Harbor Source Control

In Dec 2005, EPA/DEQ Joint Source Control Strategy was finalized.

What has been done?

- Main JSCS Objectives are to identify and control upland sources to prevent:
- 168 sites in Oregon and
  - All pathways, with focus on:
    - Groundwater
    - Soil/Bank erosion
    - Stormwater
  - Sediment recontamination prevention
    - Direct discharges
    - Linear transportation
    - Groundwater plumes
    - Soil/bank erosion areas
    - Upstream inputs
    - WQ & pollution prevention programs
    - Monitoring & adaptive management



Completed Upland Source Control is the foundation upon which the in-water remedy will be constructed. We refer to it as the Cleanup before the Cleanup.

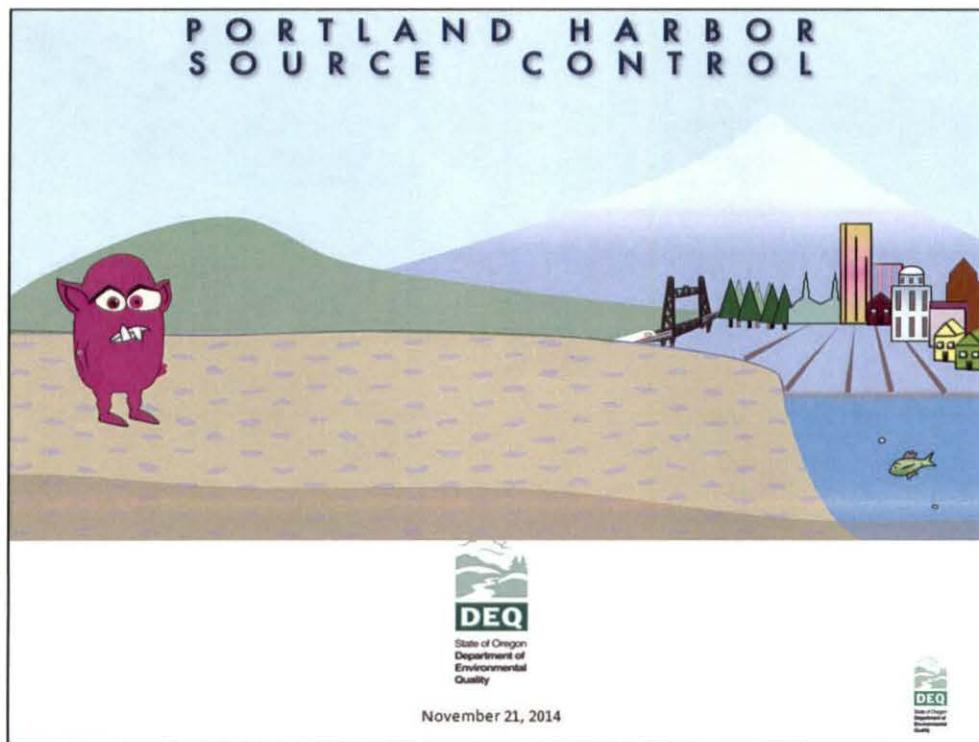
The need to control sources to prevent sediment remedy recontamination was recognized and acted on early in the Portland Harbor project. DEQ has been working for over 20 years – since before Portland Harbor was listed at a Superfund site -- to identify, characterize and cleanup or control sources to the river.

To facilitate source control decisions, DEQ and EPA developed the Joint Source Control Strategy in 2005 – which DEQ augmented with stormwater-specific guidance in 2009.

Source control implementation has focused on 3 pathways: groundwater, bank erosion and stormwater discharges.

In addition, DEQ and performing parties have investigated the sediment upstream of the Superfund study area and are actively working to remediate the identified upland and in-stream sources in this upstream reach.

DEQ works closely with EPA and MOU partners to obtain input prior to finalizing our source control decisions. Input sought includes: determining when a site is not a source, selecting source control measures and that the measures implemented are effective.



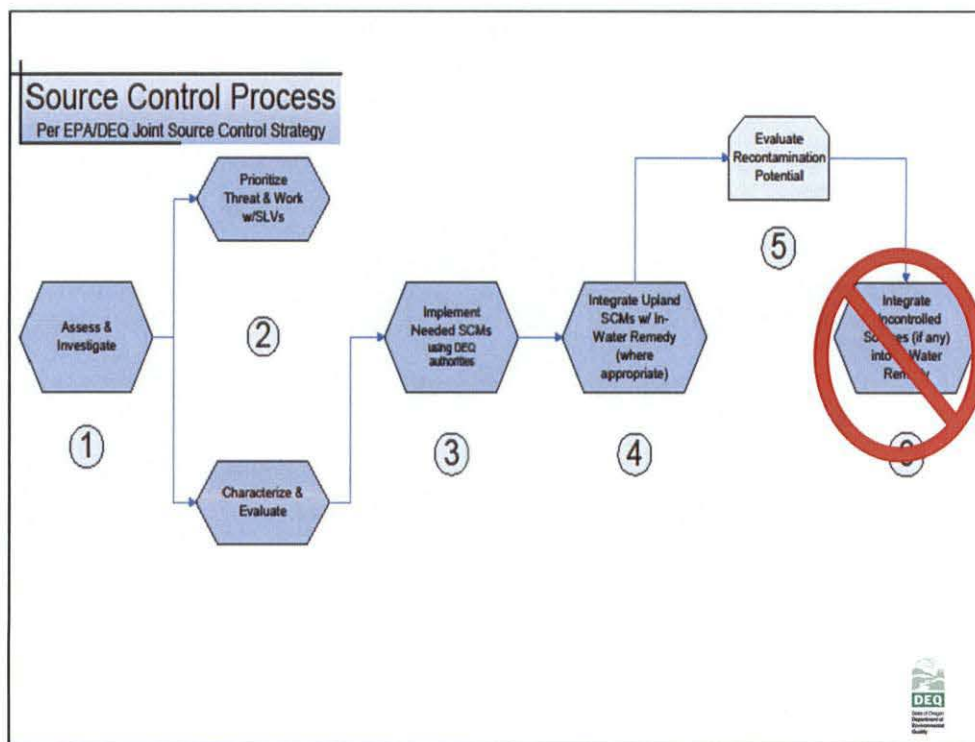
Along the way DEQ has provided 13 Milestone Reports to EPA and then in 2014, a Summary Report.

The report concludes that the need for upland source control measures is substantially complete and controls are implemented or planned. Source control efforts to date have reduced the threat of recontamination by upland or upstream contaminants. Based on current information and when all planned actions are complete, the risk of recontamination will be reduced sufficiently to allow the in-water remedy to be implemented.

Also, to help the public understand DEQ's broad source control work and be better informed to comment on EPA's Proposed Plan, DEQ produced a video to tell the source control story. A link to the video was provided to the NRRB in our written comments. We have a short clip at the end of our presentation for you today...

While source control can be an iterative process, plans and schedules are in place to complete the remaining needed source control measures at individual sites and demonstrate their long term effectiveness prior to implementation of the in-water remedy.

To support EPA's proposed plan and public outreach, DEQ will update the Summary Report in early 2016.



These are the JSCS elements – Investigate, Characterize & Prioritize, Implement controls where needed...

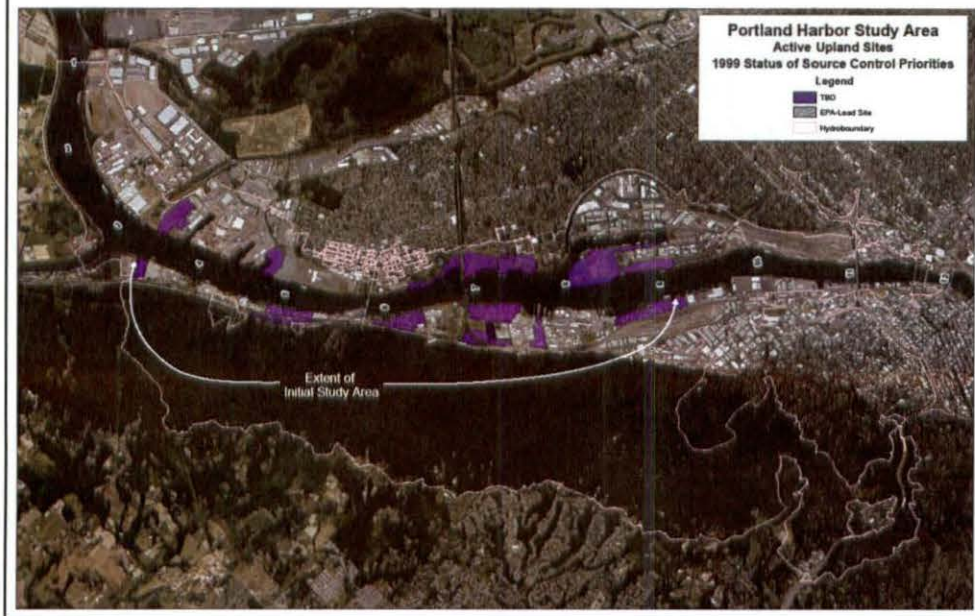
Big Picture = DEQ screened ~500 sites – ~35% of these were retained to evaluate for source control – 71% of those retained for evaluation have SCMs implemented for 1 or more pathways

There are about 10 to 14 bank areas where remedy implementation will be coordinated with the in-water remedy.

Comprehensive application of JSCS adds up to low recontamination potential and we don't anticipate having any uncontrolled sources to integrate into the in-water remedy



## Source Control in 2000



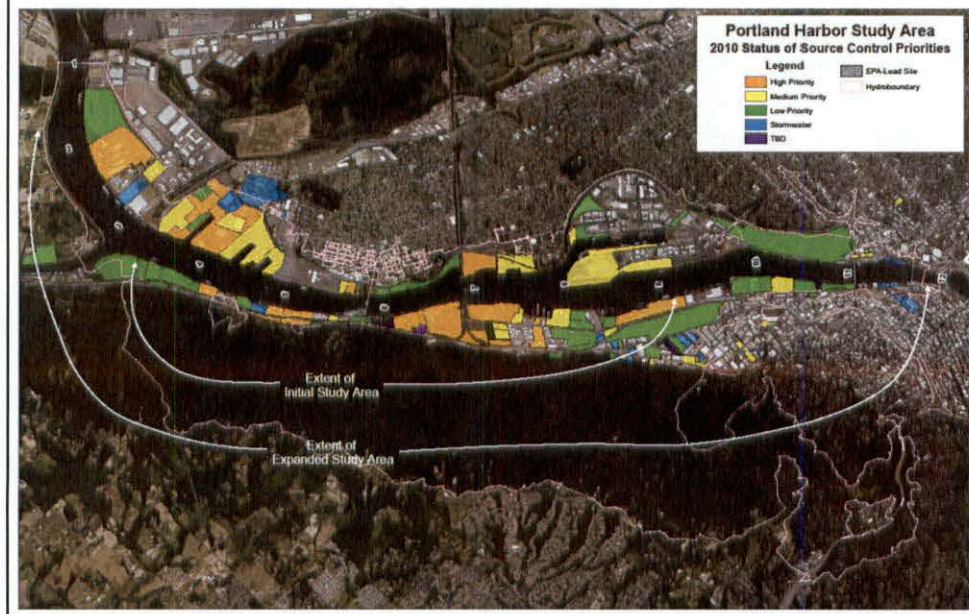
For a long-term project such as Portland Harbor, it is important to look back where we started to appreciate the project progress.

In 1998, the EPA funded "Weston" study identified areas of significant sediment contamination and a low level smear of contamination over about 6 river miles known as the Initial Study Area RM 3.5 (southern tip of Sauvie Island) to RM 9.2

At CERCLA listing in Dec. 2000:

- DEQ was working on 15 upland sites shown in purple.
- Most of which were subsequently categorized as high priority .

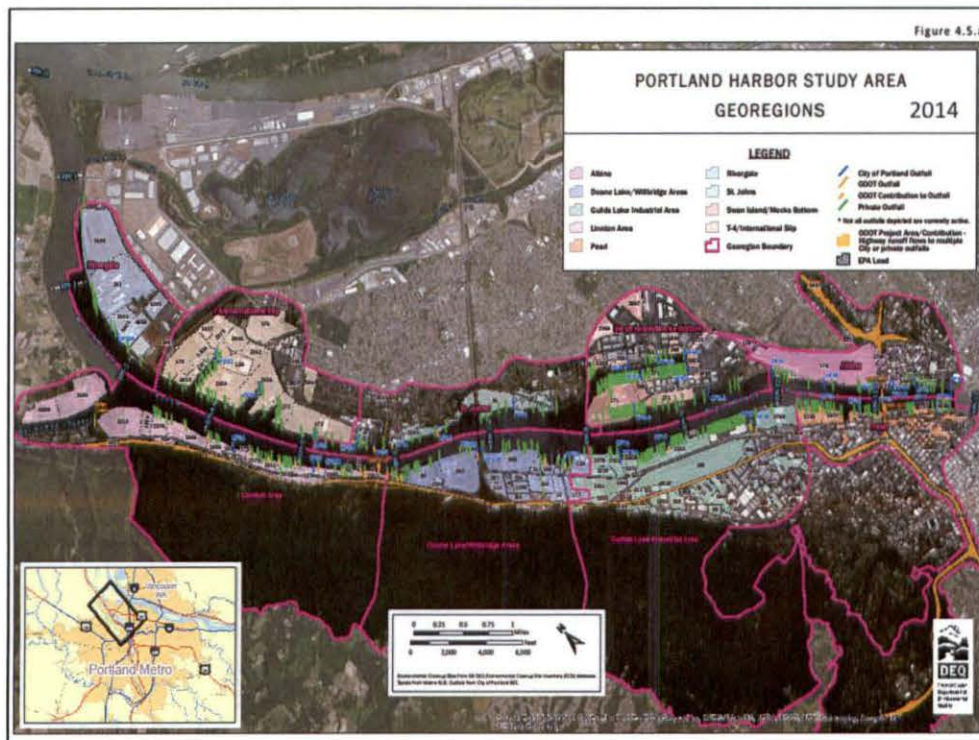
## Source Control in 2010



By 2006, the study area boundary had expanded to include about 11 miles. At that time, DEQ was working on ~70 upland sites and had completed source control prioritization. This figure from 2010 shows about 130 sites prioritized as:

High = orange, Med = yellow, Low = Green, and we had discovered some stormwater only pathway sites, in blue here.





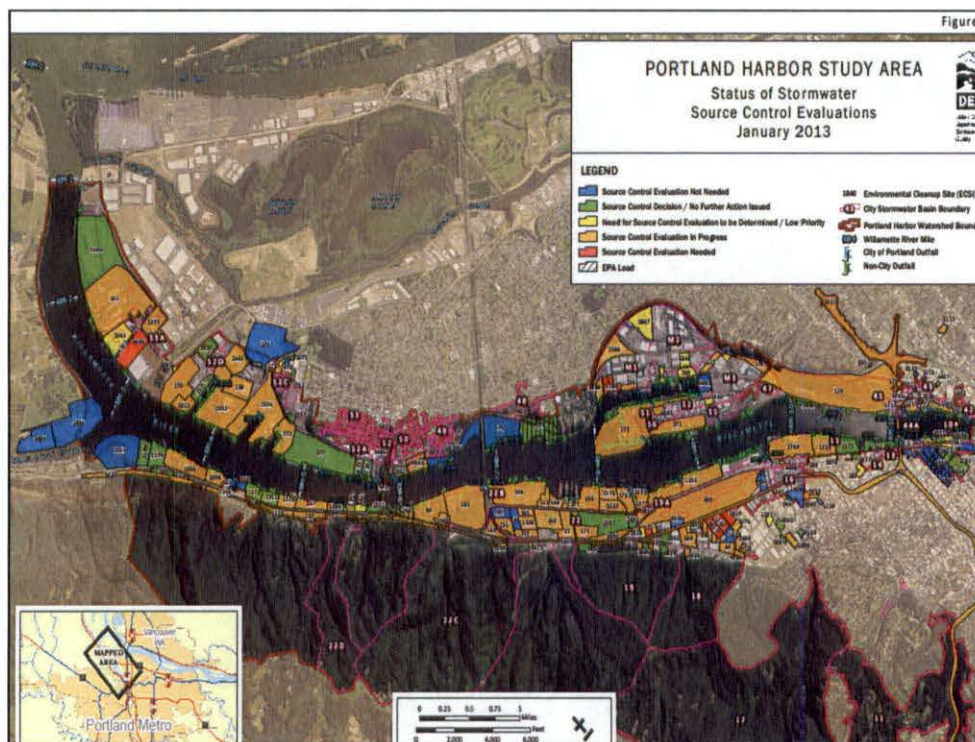
And by 2014 DEQ was working on 168 sites. Evaluation of the stormwater pathway was now included as depicted by the drainage basins on this map.

The 2014 DEQ SC Summary report depicts the uplands in 9 Geographic Regions, outlined here in bright pink. Georegions are based on drainage basins and historical districts/neighborhoods

Each Georegion is discussed in the report

- Area history and overview of current land use & activities
- The status of source control pathways investigations, cleanup, and recontamination potential are documented.
- CoCs found elevated off shore – conservative preliminary AOPC list 2010 LWG
- As well as the inventory of permitted sites – stormwater & wastewater discharges

Recontamination potential is evaluated for each site, georegion and the site as a whole.



DEQ's focus on stormwater began with an intergovernmental agreement with the City of Portland in 2003. The City's work included extensive data collection to trace contaminants up the pipes to identify sources in 39 outfall basins to PH. The City also implemented stormwater control measures and improved programs, like the stormwater manual, which reduce stormwater discharges and ensure that on-going stormwater is properly managed at sites throughout the City.

- Stormwater Strategy Workgroup – DEQ, City, EPA & LWG- 2006
- Stormwater Site Discovery – 2008 & 2012
- DEQ Guidance for Evaluating the Stormwater Pathway at Upland Sites – 2009 – this is unique nationally
- Creation of a stormwater database – 100s of solids and water sampling events from PH industrial sites and permit monitoring data from ~90 sites

DEQ has been working with 168 sites within the Portland Harbor area to evaluate and control stormwater. As you can see by all the colored sites on this map, that's really good coverage of areas at the bottom of the drainage basins.



## Stormwater Source Control Status

| Georegion              | Stormwater SC Evaluations | Source Control Decisions |
|------------------------|---------------------------|--------------------------|
| Albina                 | 4                         | 0                        |
| Pearl                  | 6                         | 4                        |
| Swan Island            | 6                         | 0                        |
| St Johns               | 3                         | 0                        |
| Guilds Lake            | 27                        | 13                       |
| Doane Lake/Willbridge  | 14                        | 4                        |
| T-4/International Slip | 11                        | 0                        |
| Linnton                | 8                         | 3                        |
| Rivergate              | 2                         | 0                        |
|                        | 83                        | 24                       |

### Harborwide Stormwater Evaluations

City of Portland - Demonstrating Effectiveness

ODOT – Implementing Controls & Designing Effectiveness Demo

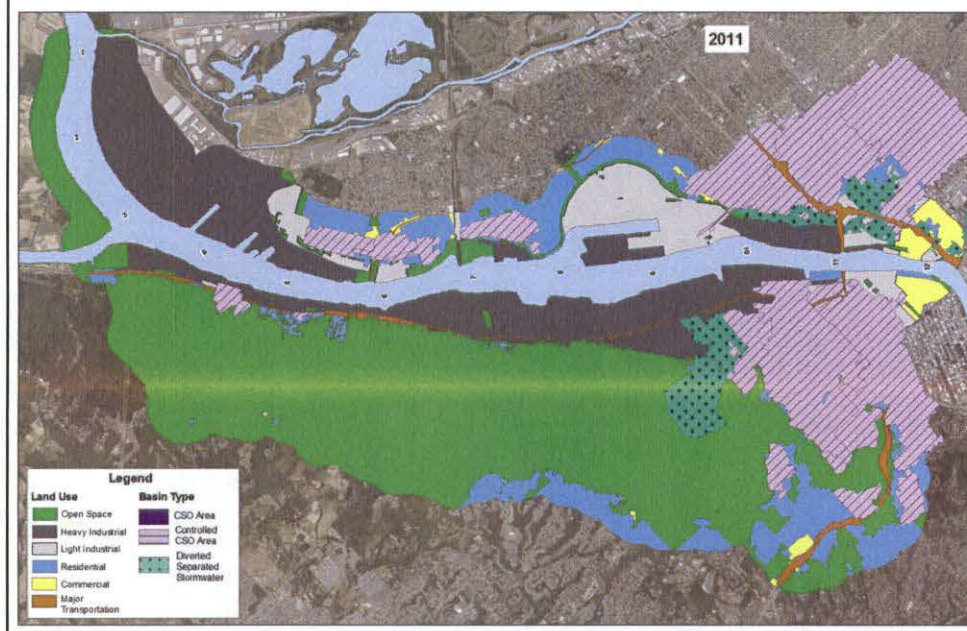


83 sites evaluating stormwater pathway for SC + the 39 City Basins and ODOT highways and bridges that discharge through 32 outfalls

24 have SCDs/NFAs (~30%) - Tracking the rest to completion over the next 2 years – while most have completed investigation and implementation of controls, effectiveness demonstration requires rain – which happens here mostly in the fall/winter – so we must wait for it to show improvement.

~90 NPDES 1200Z or Individual Permits – important to note that monitoring includes CoCs for PH (PAHs, PCBs, metals, DDx...) & 2017 renewal considering PH-specific sector  
~90 NECs

## CSO Controls in Portland Harbor: 1991-2011



The striped areas are the CSO basins that drained mostly commercial and residential areas to Portland Harbor back in 1991, when DEQ's Governor appointed Environmental Quality Commission issued an Order requiring the City to control CSOs City-wide. The City performed well under the Order, incrementally eliminating most overflow events by 2011, at a cost of about \$1 billion to ratepayers.

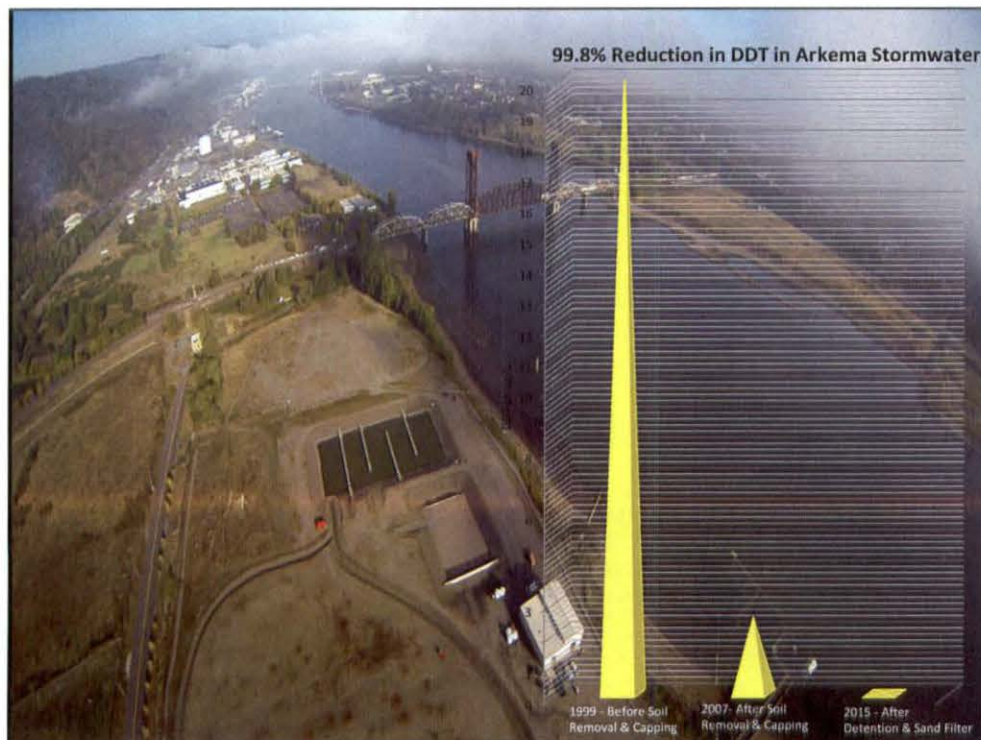
This map only shows Portland Harbor.

It is important to note that:

1. The industrial properties, located in gray narrow strips adjacent to the river, are not in basins that needed control. Not all of these areas discharged through City outfalls, but the industrial areas that did were separated when the interceptors were installed back in the 1950s. This is different than in LDW and Gowanus (and other sediment sites).
2. Forest park and other open space make up the majority of land use in the basins, and the majority of stormwater which is filtered through forest plants and soil and is really very clean. This is different than in LDW or Gowanus with dense industrial development and little open space.

By 2000, discharges from the 4 St Johns CSO basins and 2 Linnton CSO basins were controlled. In 2006, the downtown area and one basin across the river were controlled or diverted to the treatment plant. In 2011, the remainder of the CSO basins were controlled or diverted to the treatment plant. Additionally, about 600 acres of separated stormwater (shown in dotted areas) were diverted to the CSO Tunnels, including 165 acres of industrial area.

While controlled stormwater still discharges through City and private outfalls into Portland Harbor, having CSOs without industrial inputs and with sewage overflows controlled since 2011 makes Portland unique among urban sediment Superfund sites.



Schnitzer – Auto recycling – PCBs, metals, etc.

- paved large portions of the site
- installed a mechanical treatment system
- Improving truck access areas and BMPs to prevent track-off
- Water is stored in these 2-million gallon tanks for re-use in the industrial processes & further treatment
- Electrocoagulation piloted and being installed large scale now

Calbag – metals recycler

- End of pipe recirculating sandfilters and proprietary media filtration
- following traditional BMPs – daily sweeping, CB filters, o/w separators, etc.

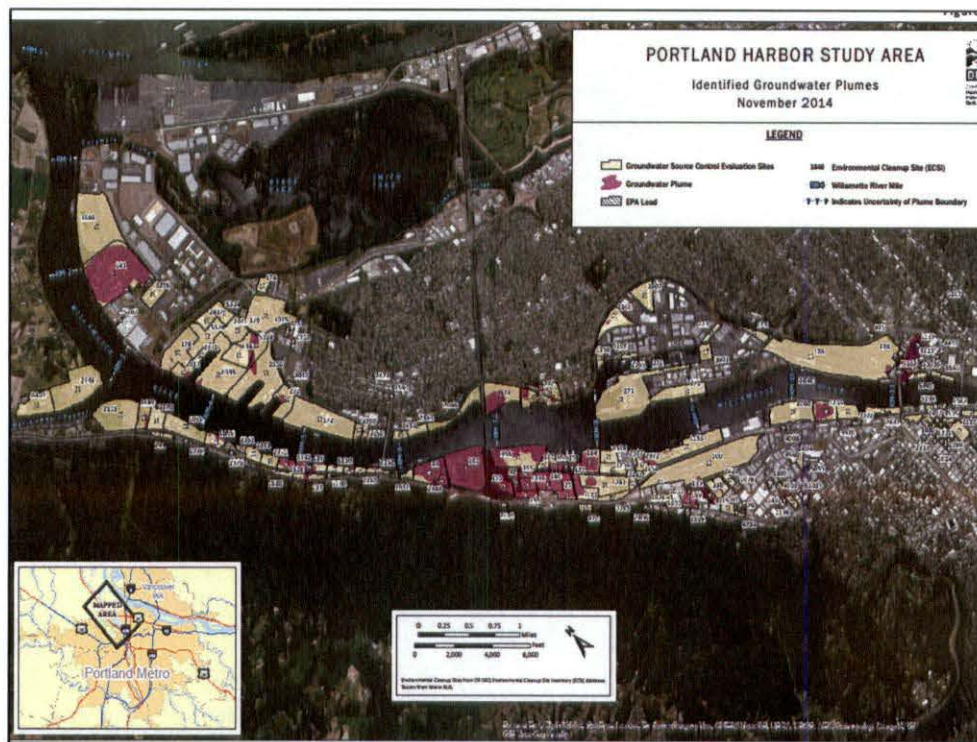
Evraz – steel pipe manufacturing

- Lots of land = opportunity for settling and storage (in tanks below ground)
- Can upgrade with flocculant/coagulate to improve performance, if needed
- Working well for PCBs

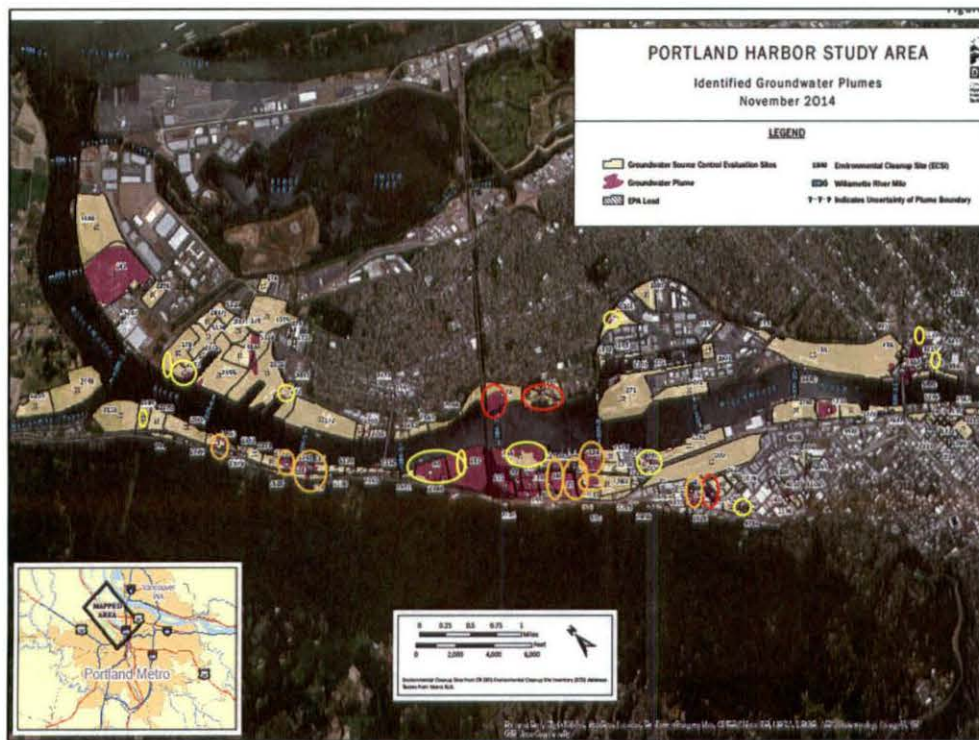
Arkema – former chemical manufacturing – DDx

- Deconstruction of buildings
- Patches of removal and capping
- Channels to collect stormwater and convey to football field sized settling basin, then sand filter
- Reviewing work plan now to pilot polishing process to get that last bit





This figure from 2014 shows the groundwater plumes identified and defined by the upland characterization of the sites in beige.



Orange circles show Petroleum Bulk Terminals with GW containment/treatment systems in place or No SCM Needed

Yellow circles show the other DEQ Sites with GW containment/treatment systems in place or construction or NFA SCDs issued.

Red circles show EPA NPL/RCRA Sites where groundwater containment or treatment systems are in place or where groundwater plumes have been excluded.

The remainder are either plumes where no SCMs are needed, are plumes that are being evaluated in FS or SCEs. In all cases DEQ does not believe that the plumes present a recontamination risk but may require a remedy to protect river receptors or comply with ARARs.





One plume we are actively working on is at the Gasco site, where Groundwater is contaminated with PAHs, metals & cyanide, due to manufactured gas plant operations from 1913 to 1956.

NWN installed a line of groundwater wells along the riverfront to keep groundwater levels lower than the river, which prevents contaminated groundwater from getting into the river. Intercepted groundwater is pumped out and treated to remove contaminants and then the clean water is discharged to the river

Another site nearby, Arkema, has installed a containment wall along 1700 feet of riverbank that is up to 90 feet deep in portions, along with a pump and treat system to deal with DDx, perchlorate and other CoCs...

Across the river at the Premier Edible Oils site, they are just completing installation of a cut off wall, using a new technology that cuts to depth and introduces the slurry in the same pass. The wall is about 550 feet long and 35 feet deep.





The BP/ARCO bulk terminal needed to replace a failing seawall to support their very large tanks, but also to help contain contaminated groundwater under the site.

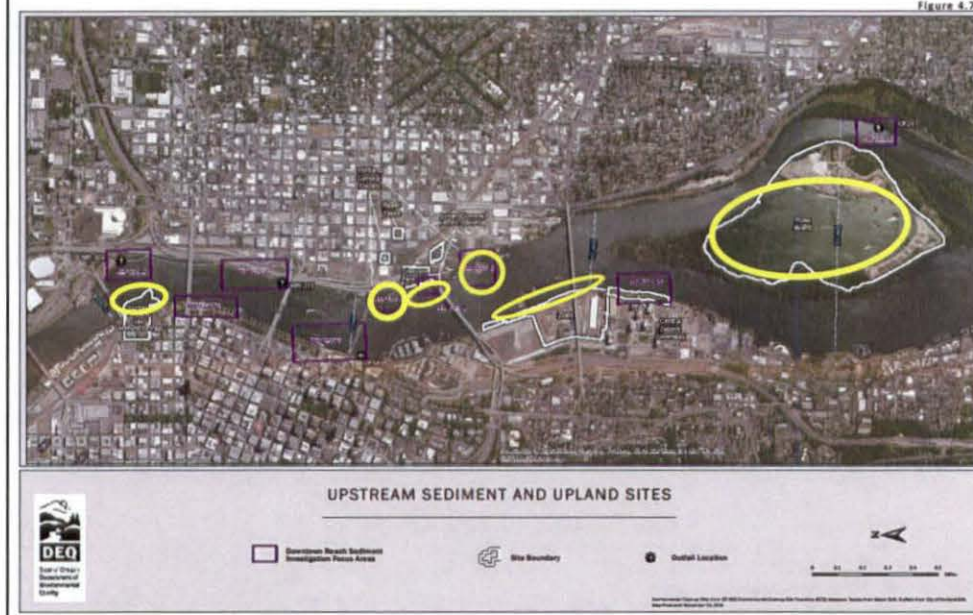
Temporary sheetpile was installed to protect the river during demolition of the old revetment and removal of contaminated sediment from the river. EPA agreed that it would limit disturbance and get contamination out of the river sooner to extend DEQ's upland work into the river here, rather than waiting for the EPA remedy.

Finally a new steel wall was installed that helps contain groundwater, which is also controlled by a pump and treat system.

Across the river on the northern most point of the study area... This summer, Evraz completed soil removal, riprap stabilization and laying back of a steep section of bank, to address PCBs and metals in slag bank fill. These photos are looking south from their dock and then north.

XX linear feet of bank was treated and planting is now occurring in seasonal phases.

## Upstream Work



This is the reach immediately upstream from the PH study area and flows through downtown Portland.

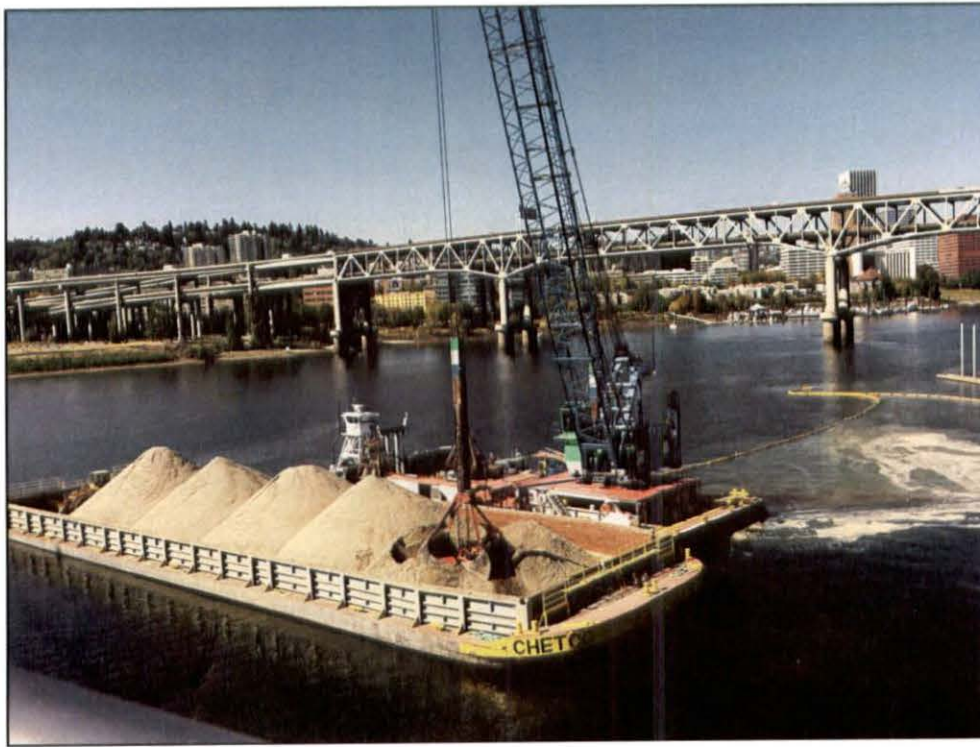
DEQ has addressed the most significant sources – upland and in-water.

- completed source control efforts at 6 properties - outlined in white boxes
- removed or capped sediment contaminated with PCBs, PAHs and dioxins from 4 areas in the river
- nearing completion on 2 more.
- stormwater discharges have been reduced or eliminated from municipal outfalls in the area.

Suspended sediment concentrations here are currently much lower than RALs in PH and are expected to decrease toward background as the last cleanups are completed and natural recovery continues.

There are no on-going sources to pose a threat of recontamination to the Harbor.

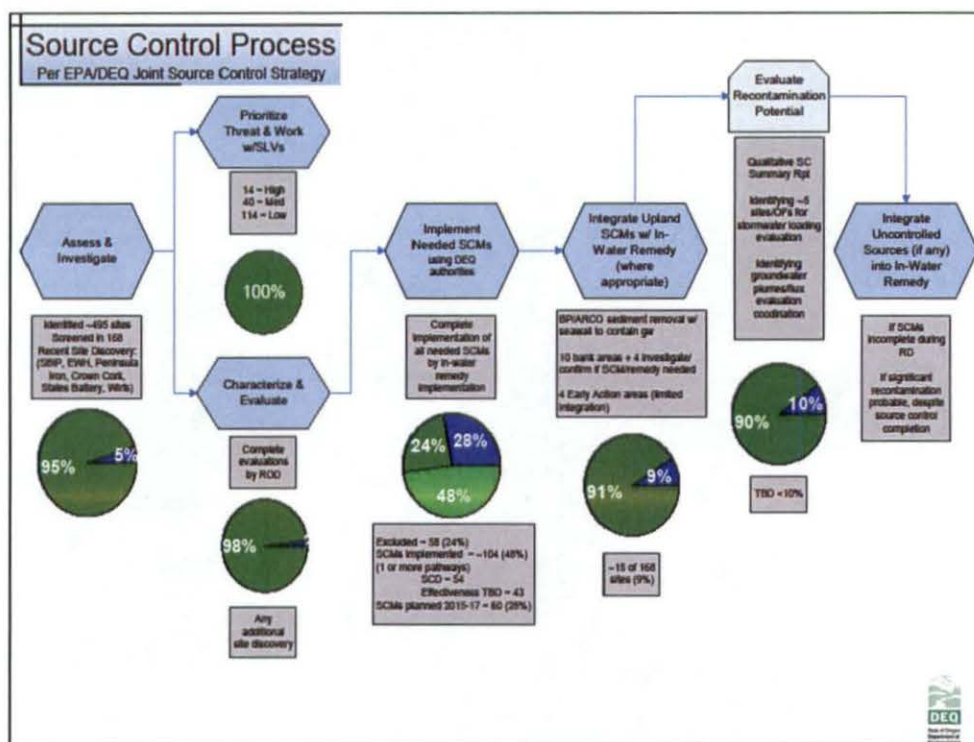




Zidell Sediment Cap and Riverbank – RM13 West – 2011 – 2,500 linear feet of bank, upland removal & capping, in-stream sediment cap – plantings now have filled in

PGE RM 13.5 East Sediment Cap 2015 – permitting is moving forward now to implement a similar cap at RM 13.1 in 2016.





DEQ is focusing on implementing effective measures at the remaining 28% of sites – now, thru the ROD, RD, until remedy implementation – We are confident we will be complete, which is different than our understanding of the status of investigation and completion of source control work at the LDW and Gowanus, which both have PPs, RODs and are now in RD.

Completion of source control is the line of evidence DEQ is relying most heavily on to make our qualitative conclusions that the potential for sediment to become recontaminated by upland sources is pretty low. Even for the stormwater pathway, DEQ is confident that the risk of recontamination is low because we have been addressing stormwater comprehensively. But, since recontamination has occurred due to uncontrolled stormwater at other sites in the Pacific NW, we worked with EPA to target about 5 areas for more robust stormwater recontamination evaluations. [Swan Island Lagoon, Schnitzer's International Slip, Guilds Lake & Doane Lake heavy industrial area outfall basins and RM 11E.]

With source control complete, we don't anticipate having to integrate any uncontrolled sources, beyond the banks identified, into the in-water remedy.

So, what's next?

## Continuing Collaboration

DEQ & EPA

sufficient

remedy

Next steps

- Joint d

- Reco

- CERC

- Integ

- We we

& CSTA



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DEQ & EPA:

- Agree that source control is sufficient for the remedy to go forward
- And are continuing to partner on devising a long-term monitoring plan to demonstrate the success of upland source control and the in-water remedy

To do this we are working toward agreement on key definitions and concepts

And for a final word on source control, here's a sample of our video work featuring Willamette RiverKeeper, Travis Williams...



Support DE& Approach  
Tremendous work identifying, characterizing,  
prioritizing sites (high, medium, low)  
More so than other similar sites  
Let more work to do  
Depends on long term monitoring  
Risk of recontamination has been significantly  
reduced.